USE CASE

authUSB SafeDoor in industrial environments

What is the specific issue of Industrial environments regarding USB flash drives use?

In Air Gapped networks the use for both, own and third-party processes (updates etc.)of USB flash drives is necessary . Within these infrastructures, this use must be regulated and controlled. This control is done nowadays in many cases through Firewalls and other elements that are dedicated to scanning USB drives and isolated network traffic, looking for Malware threats, only at the software level.

Cyberattacks in industrial environments are not random in nature, but are perfectly thought out and targeted. Attackers know perfectly the environment where it will be carried out.

In addition, the increasingly frequent opening between IT and OT networks, causes many more vulnerabilities through USB devices. This issue has an inmmediate impact on the safety of the industrial plants, up to this moment perfectly isolated from this threats.

Hardware attacks (BadUSB) carried out via USB sticks, are very specific,targeted. The attacker knows precisely the system that is about to breach. Such threats are also undetectable,persistent over time and in most cases irreversible.

Finally there is the Electrical threat (USB Killer). This threat is intended to bring down the first layer of physical security in the organization .The inmediate cause of this is that the use of USB devices coming into the OT network can not be protocolized. Normally this previous takedown is given as part of a combined attack. Sand would disable the dedicated equipment of the network with the purpose of carrying out a subsequent attack at hw level. This would be

persisting in time and, what is most serious undetectable. Nothing scans the Hw of the computer.

Control at all levels of these devices is vital for the safety and operation of the industrial chain.

What does SafeDoor provide?

SafeDoor is a solution that analyses, protects and detects attacks via USB devices. It acts as a barrier between these and the computer equipment of an organization, taking action against the three attack vectors:

- **Electric**: It continually monitors the behaviour of the USB device at the electrical level, identifying and halting attacks by overvoltage of the usbKiller type.

- **Hardware**: It continually monitors the behaviour of the USB device at the hardware level, spotting and deactivating attacks from the BadUsb family, HID threats (rubber ducky and similar ones), false network cards, complex interfaces, etc.

- **Software:** With an integrated antivirus motor (compatible with various manufacturers) with which it carries out an analysis previous to the download or transfer of any content.

The behaviour of the USB device is monitored at all times until the extraction, avoiding in this way attacks activated via time or the number of connections, which would have passed unnoticed in an initial analysis. Because of these reasons, amongst others, a foreign USB device never should be directly connected to the organization's equipment.

In addition to the protection of the system, it also offers audition and traceability of all the connected devices and the analyzed files.

How does SafeDoor fit into our work and cybersecurity scheme?

1. ACCESS CONTROLS

Fully autonomous and automated installation of SafeDoor (Only connected to the Electrical network) Through the built-in LEDs ,SafeDoor tells us whether the connected device is safe or not, performing the scanning at the three types of threats.(HW, SW and electrical)

2. "FRONTERA- FRONTERA/ADUANA" USE

FRONTERA

This model allows for the dumping of the content of an untrustworthy external device in an internal trustworthy inventoried device that is authorized for its for its later

connection to the internal equipment of the organization. In this way it is guaranteed that there will not be HW or electric threats and that the contents have been analysed via antivirus, providing traceability of all the files interchanged via USB.
Two different types of dedication can be given as a Frontera team:

-Automated: the scanning is carried out in a totally automatic way, both firmware and of the whole of the files contained in the USB device.
-Interactive: The check is made at Hw and Electric level and, through the web console of SafeDoor, we can choose those files that we want to analyse before downloading them.

FRONTERA/ADUANA

This model allows for the upholding of the Airgap between IT/OT networks or networks with different levels of safety rating. At the same time it also maintains the tracking of folders introduced via an internal network.

The SafeDoor equipment that is located in the internal network, will only accept inventoried USB devices that previously must be scanned by the external SafeDoor. This last one will create a digitally signed folder with a list of files ,scanned and authorized, in the inventoried USB device. During this process, the internal SafeDoor will guarantee, with a previous verification of the digital signature, that only these files are transferred. With this model, the antivirus updates for the internal SafeDoor (a laborious process in isolated networks) are no longer necessary, even when interchanging information between networks located in several sites.

3.-REMOTE TRANSFER

This model allows for a secure transfer of files to a remote location through the central console, download and dump in an inventoried USB device.

Specially designed for maintenance operations and remote configuration, it makes available to the technical experts the necessary files for its activity in a specific location. This way ensures the confidentiality, traceability, integrity and security of the information, as well as the probate of the process minimizing the possibility of human error.

SafeDoor allows the use of Encrypted USB devices at a HW level ,wich we strongly recommend, (DataLocker, Iron Key) and also Bitlocker and Luks encrypted devices
SafeeDoor also includes the possibility of using digital signature of the files that are downloaded to ensure its integrity.
The traceability of the processes is total.

FAQ:

1.-Maximum number of antiviruses embeded on SafeDoor*

Safe Door supports up to two simultaneous antivirus complete engines.
*We can integrate more than two if necessary

2.-Way to update antiviruses.

There are three methods of updating signatures, depending on your environment:

- **Direct**.
- **Indirect.**
- **Offline**.

Scan levels to run (fast, full, selective,.) As soon as a memory is connected to safeDoor, hardware and electrical analysis is performed automatically. This analysis is very fast, just two seconds, although it continues to be continuously monitored until it is extracted. As for software scanning (antivirus) there are two modes of use:

- **Manual:** From a web browser, the user selects the files/folders to download. On these selected files, analidis is carried out by the antivirus (selective analysis)
- **Automatic**: Anti-virus scanners all the contents of the memory reporting through Leds progress and result. No need to access the web interface, the computer is autonomous (full analysis)

It is also possible to modify the default settings of antivirus engines (maximum size, depth levels in compressed files, extensions to be scanned...)

3.-Average USB scanning time.

The scanning time is similar to that of a desktop computer, since the bottleneck is at the reading speed of the USBstick. With modern memory read speeds of about 35 MB/s can be achieved, while with advertising memories or degraded by usage the speed can drop to 15/20 MB/s.

4.-Log storage: device, console?

Each of the events that take place in the safedoor devices are reflected in the Central Console

- It receives the audit reports (detailed registry of the devices and files analyzed) digitally signed via the SafeDoor through an HTTPs channel.

- Through the same channel it provides firmware updates and automatic setup for all the SafeDoors. If needed it can also act as a mirror of the latest antivirus updates.
- Embeddable with an external SIEM via syslog.
- It offers a web interface to the administrators for the interaction with the system.
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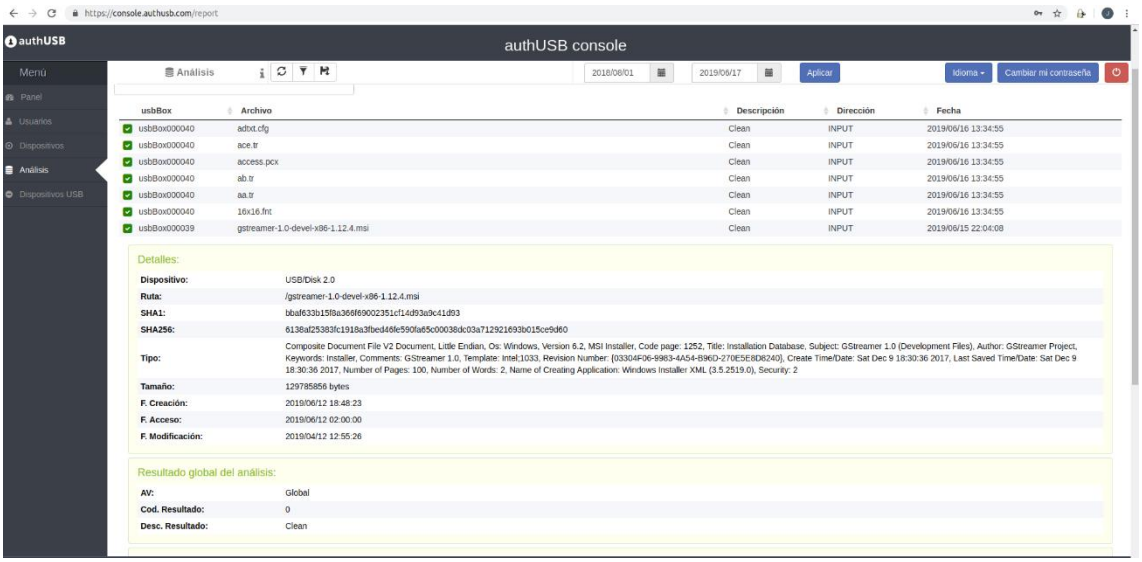
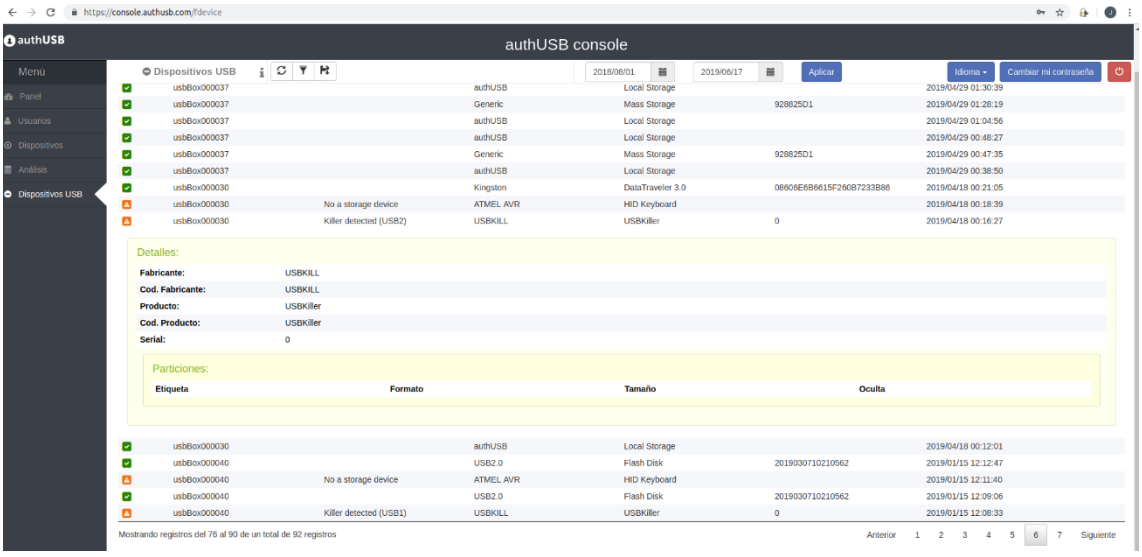
5.-Maximum number of devices to manage from a central console

It is scalable depending on the hardware or configuration of the virtual machine on which you run. With 2 cores /16GB RAM 50 linked devices are supported.

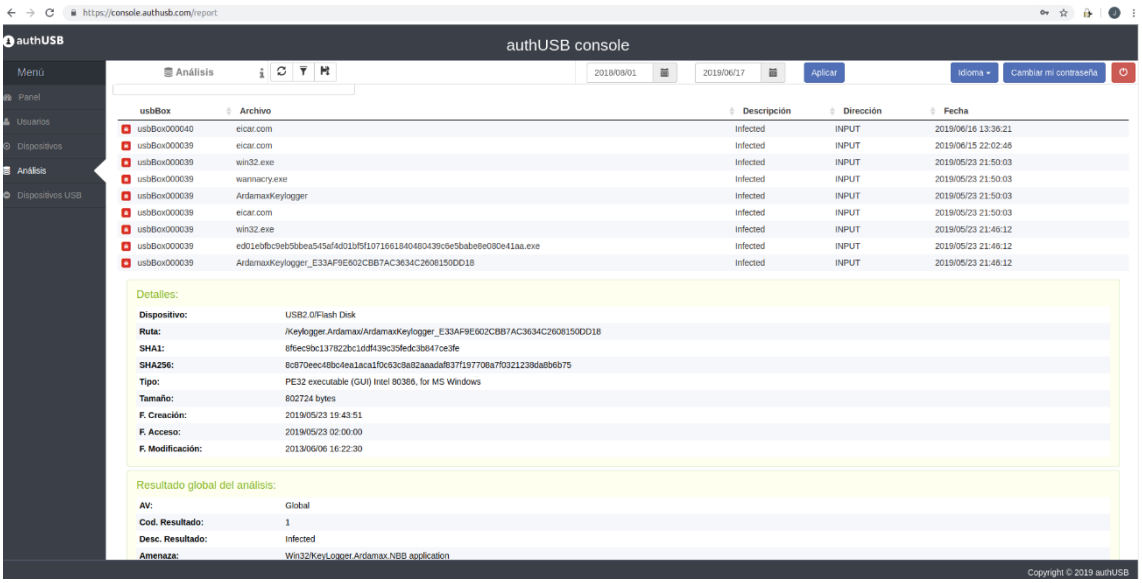
6.-Central console screens



clean file capture



SW threat



HW threat

7. Download of files

The first and mandatory step to download a file is the Software (antivirus) scan. In case of threat detection in any of the files, in no case will the user be able to download that one specificall. In case the rest of files are free of threats,the user could be able to download them:

1) Into the user PC
2) Into a USB flash drive connected to SafeDoor
3) Into a previously configured folder.